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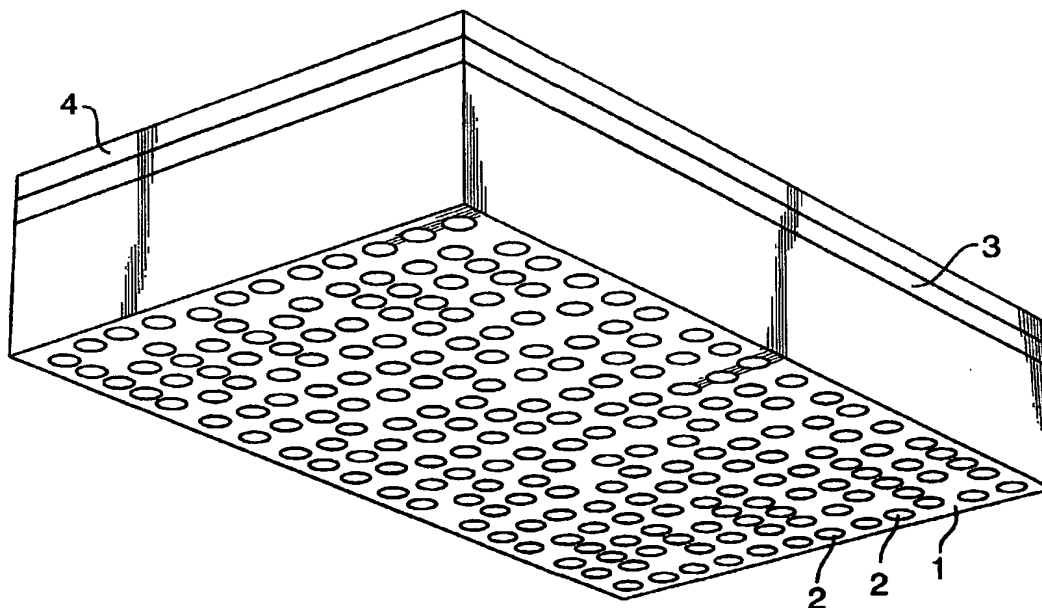
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(54) Title: METHOD FOR THE MANUFACTURE OF A DISPLAY



(57) Abstract: A method for the manufacture of displays, in particular flexible displays, is disclosed. A substrate (1) provided with small openings (2), rendering the substrate porous and forming trenches in the substrate (1), is used. A removable layer (3) is attached to the substrate (1). An etch and temperature resistant layer (4) is deposited onto the removable layer (3), and a display is processed on said etch and temperature resistant layer (4). The removable layer (3) is removed by etching through the openings (2) in the substrate (1) and the substrate may be re-used.



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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the International search (name of data base and, where practical, search terms used) EPO-Internal		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00/45426 A (HORZEL JOERG ;INTERUNIVERSITAIRE MICROELEKTR (BE); VAZSONYI EVA (H) 3 August 2000 (2000-08-03) cited in the application page 9, line 5 -page 10, line 19; figures 1A-N page 15, line 31 -page 16, line 31	1,3,4,6, 7,14-18
X	US 5 665 607 A (KAWAMA YOSHITATSU ET AL) 9 September 1997 (1997-09-09)	1-3,5,6, 14,15, 17,18
Y	column 13, line 43 -column 16, line 14; figures 2A-G	8-13
Y	GB 1 515 031 A (IBM) 21 June 1978 (1978-06-21) page 1, line 55 - line 67; figures 1-6	8-13
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.		
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Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel (+31-70) 340-2040, Tx. 31 651 epo nl, Fax (+31-70) 340-3016		Authorized officer Dauw, X

INTERNATIONAL SEARCH REPORT

Int'l Application No.

PCT/IB 03/04937

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 196 54 791 A (MITSUBISHI ELECTRIC CORP) 25 September 1997 (1997-09-25) figure 10	1-18
A	GB 1 475 656 A (IBM) 1 June 1977 (1977-06-01) page 2, line 117 - line 126; figures 1,2 page 4, line 121 -page 5, column 2	8-13
A	US 5 362 671 A (MCCLELLAND ROBERT ET AL) 8 November 1994 (1994-11-08) figures 10-12	1-18

INTERNATIONAL SEARCH REPORT

Int. Application No.
PCT/IB 03/04937

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0045426	A	03-08-2000	EP 1024523 A1 02-08-2000 AU 2544900 A 18-08-2000 WO 0045426 A1 03-08-2000 EP 1153423 A1 14-11-2001
US 5665607	A	09-09-1997	JP 3360919 B2 07-01-2003 JP 7226528 A 22-08-1995
GB 1515031	A	21-06-1978	US 3962052 A 08-06-1976 DE 2611158 A1 28-10-1976 FR 2308202 A1 12-11-1976 IT 1056750 B 20-02-1982 JP 1041222 C 23-04-1981 JP 51124382 A 29-10-1976 JP 55032216 B 23-08-1980
DE 19654791	A	25-09-1997	JP 9260342 A 03-10-1997 DE 19654791 A1 25-09-1997 US 6261969 B1 17-07-2001
GB 1475656	A	01-06-1977	DE 2425684 A1 11-12-1975 FR 2273081 A1 26-12-1975 JP 50153795 A 11-12-1975 US 3971683 A 27-07-1976
US 5362671	A	08-11-1994	US 5206749 A 27-04-1993 US 6232136 B1 15-05-2001 US 2003057425 A1 27-03-2003 US 5528397 A 18-06-1996 US 5736768 A 07-04-1998 US 2001019371 A1 06-09-2001 EP 0565588 A1 20-10-1993 JP 3227156 B2 12-11-2001 JP 6504139 T 12-05-1994 JP 3361325 B2 07-01-2003 JP 2002014375 A 18-01-2002 US 5396304 A 07-03-1995 US 6121950 A 19-09-2000 US 6486929 B1 26-11-2002 WO 9212453 A1 23-07-1992 US 5376979 A 27-12-1994 US 5751261 A 12-05-1998 US 5377031 A 27-12-1994 US 5539550 A 23-07-1996 US 5438241 A 01-08-1995 US 6143582 A 07-11-2000 US 5475514 A 12-12-1995 US 5666175 A 09-09-1997 US 5713652 A 03-02-1998 US 5702963 A 30-12-1997 US 6320568 B1 20-11-2001 US 5583335 A 10-12-1996 US 5581385 A 03-12-1996 US 5499124 A 12-03-1996 US 2001040644 A1 15-11-2001 US 6043800 A 28-03-2000 US 6317175 B1 13-11-2001 US 6072445 A 06-06-2000

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/IB 03/04937

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5362671	A	US 5743614 A	28-04-1998
		US 5757445 A	26-05-1998
		US 6627953 B1	30-09-2003
		US 5661371 A	26-08-1997
		US 2004070697 A1	15-04-2004
		US 6521940 B1	18-02-2003
		US 5258320 A	02-11-1993
		US 5317236 A	31-05-1994
		US 5258325 A	02-11-1993
		US 5317436 A	31-05-1994
		US 5376561 A	27-12-1994
		US 5444557 A	22-08-1995
		US 5256562 A	26-10-1993
		US 5861929 A	19-01-1999
		US 5331149 A	19-07-1994
		US 6424020 B1	23-07-2002